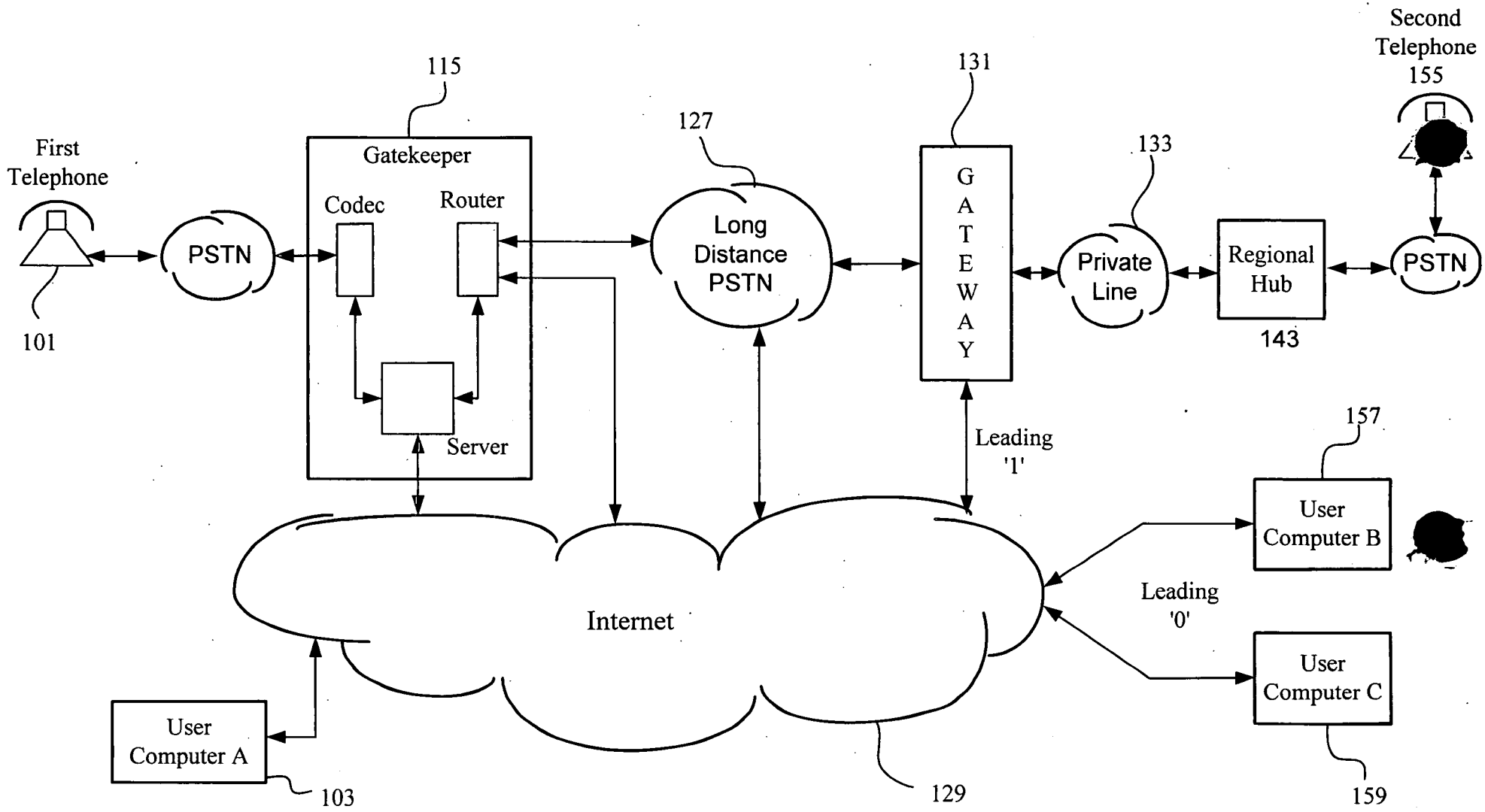

FIG. 1

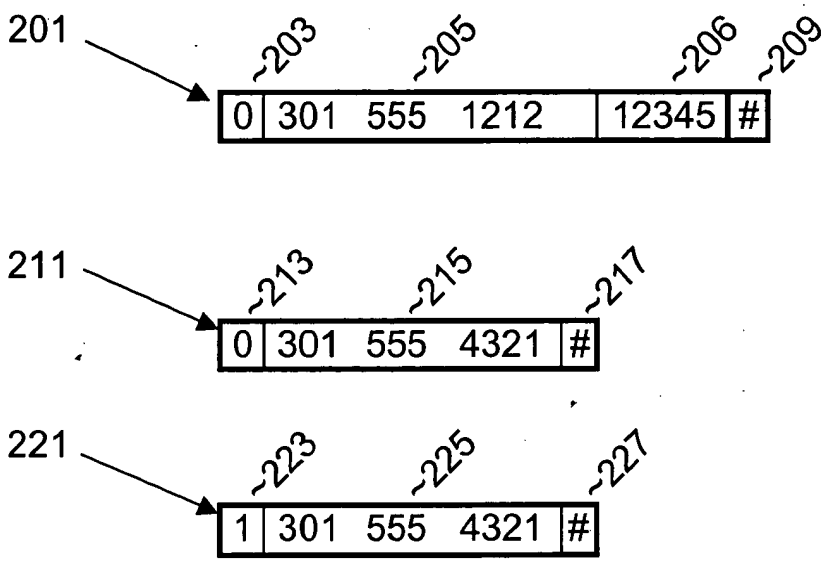
201
~203
~205
~206
~209
0 301 555 1212 12345 #
211
~213
~215
~217
0 301 555 4321 #
221
~223
~225
~227
1 301 555 4321 #

FIG. 2

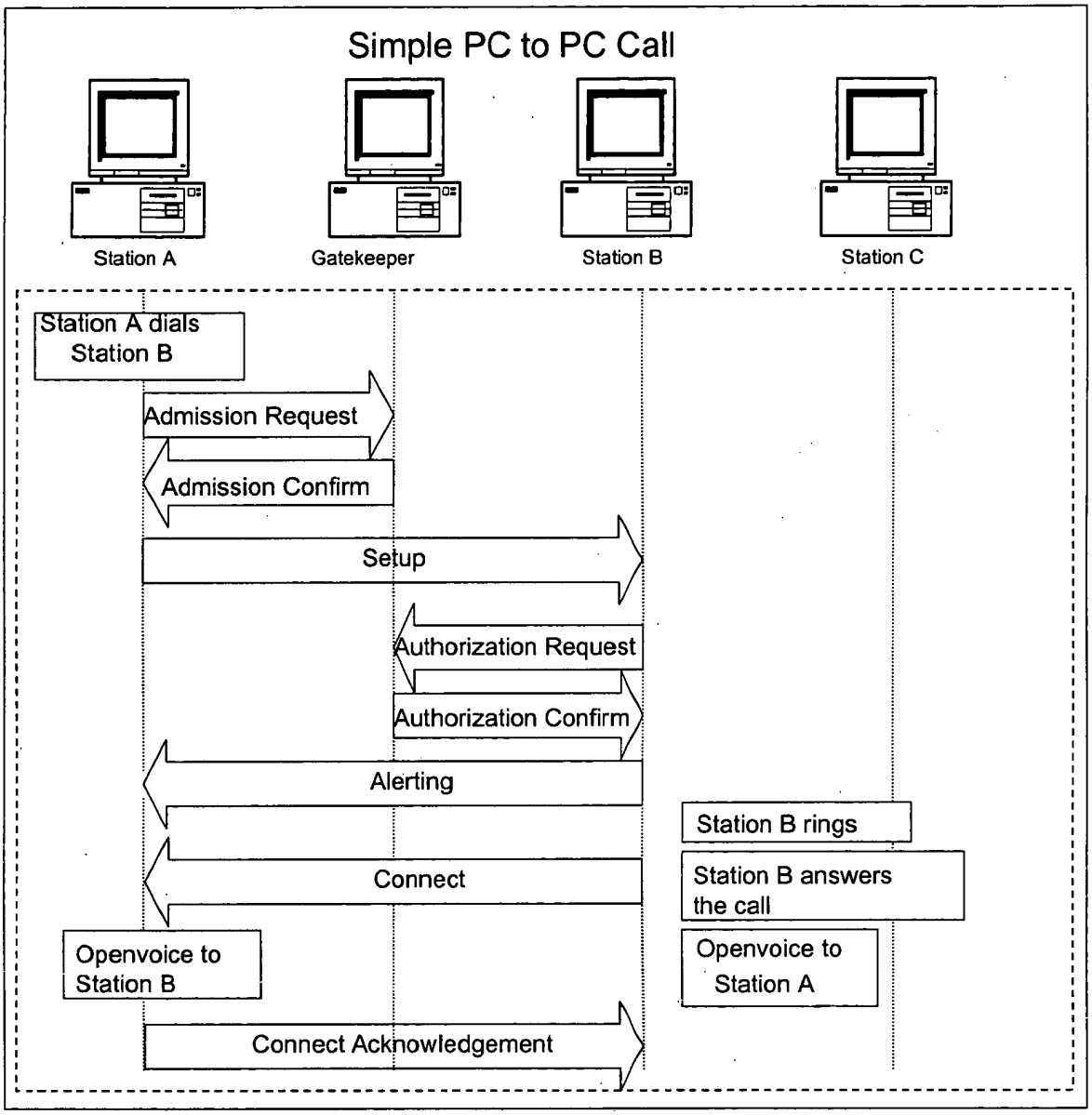

FIG. 3

Message Elements			Bytes	Value	Description
Gatekeeper Message Format					
	Ethernet Header				
		Destination MAC Address	6		
		Source MAC Address	6		
		Type	2		
	IP Header				
		Version/Head Len	1		
		Service Type	1		
		Total Length	2		
		Identification	2		
		Flags/Fragmentation Offset	2		
		TTL	1		
		Protocol	1		
		Checksum	2		
		Source Address	4		
		Destination Address	4		
	UDP Header				
		Source Port	2		
		Destination Port	2		
		Total Length	2		
		Checksum	2		
	Other				
		CRC-8	1		
		Chan ID High	1		
		Chan ID Low	1		
		Protocol Discrim	1		
		Call Reference	3		
		Message Type	1	0x70	ZeroPlus Message Type
		ZeroPlus Message Type	1		Define for ZeroPlus Message
		Specific IE ID	1		Specific IEs

FIG. 4 - Gatekeeper Message Format

Message Elements		Bytes	Value	Description
Gatekeeper Request Message 0x38 Information Elements				
Request Sequence Number				
	Req Seq Number	1	0x65	ID of Request Sequence Number Information Element
	Request Sequence Number	2		A monotonically increasing number unique to the sender. It shall be returned to the receiver in any message associated with this specific message
	UIDPIN	1		ID of UIDPIN Information Element
	Length (L)	1	L1	Length of UIDPIN
	UID	L1		ACSII UIDPIN
	Client Version	1	0x72	ID of Client Version Information Element
	Length	1	L2	Number of bytes in Client Version IE (8 bytes)
	Client Version	L2		Client Version consists of 4 integers: MAJOR, MINOR, BUG_FIX, PATCH

FIG. 5 - Gatekeeper Request Message Information Elements

Message Elements		Bytes	Value	Description
Gatekeeper Confirm Message 0x39 Information Elements (Section 1)				
	Req Seq No.	1	0x65	ID of requested sequence Number Information Element
	Request Sequence Number	2		This is a monotonically increasing number unique to the sender. It shall be returned by the receiver in any message associated with the specific message.
	Station Type	1	0x2F	ID of Station Type Information Element
	Station Type	1	0x00	Station_Telset
			0x01	Station_CO
			0x05	Groundstart
			0x06	Loopstart
			0x07	Wink_start
			0x08	Wink_Start_With_FGBD
			0x09	Delay_Dial
			0x0A	Immediate_Start
			0x0B	Fixed_Pause
			0x0C	ISDN_BRI_MVIP
			0x0E	ISDN_PRI
	Country Code*	1	0x55	ID of country Code Information Element RAS_CC
	CC Length*	1	L1	Length of Country Code
	Country Code*	L1		ASCI Country Code
	City Code*	1		ID of City Code Information Element RAS_City_Code
	City Code Length*	1	L2	Length of City Code
	City Code*	L2		ASCII City Code
	COC*	1	0x57	ID of COC Inforamtion Element RAS_COC
	COC Length*	1	L3	Length of COC
	Central Office Code*	L3		ASCII COC
	XXXX*	1	0x58	ID of XXXX Information Element RAS_XXXX
	XXXX Length*	1	L4	Length of XXXX
	Extension*	L4		ASCII XXXX

* For End Station Only

FIG. 6a - Gatekeeper Confirmation Message Information Elements

Message Elements		Bytes	Value	Description
Gatekeeper Confirm Message 0x39 Information Elements (Section 2)				
	Rec_ID	1	0x5D	ID of Rec_ID Information Element
	Length	1	L1	Length of Rec_ID
	Record ID	L1		Record ID of CDR
	Feature Info	1	0x7b	ID of Feature Info Information Element
	Length	1		Number of Bytes in Feature Info IE
	Feature Status 0	1		Bit 7 - Forward on Busy and No Answer
				Bit 6 - Forward on No Answer
				Bit 5 - Forward on Busy
				Bit 4 - Forward Unconditional
				Bit 3 - Call Waiting
				Bit 2 - Transfer
				Bit 1 - Call Blocking for Outgoing Calls
				Bit 0 - Call Blocking for Incomming Calls
	Feature Status 1	1		For future Use
	Feature Status 2	1		For future Use
	Feature Status 3	1		For future Use
	Feature Allowed 0	1		Bit 7 - Forward on Busy and No Answer
				Bit 6 - Forward on No Answer
				Bit 5 - Forward on Busy
				Bit 4 - Forward Unconditional
				Bit 3 - Call Waiting
				Bit 2 - Transfer
				Bit 1 - Call Blocking for Outgoing Calls
				Bit 0 - Call Blocking for Incomming Calls
	Feature Allowed 1	1		For future Use
	Feature Allowed 2	1		For future Use
	Feature Allowed 3	1		For future Use

FIG. 6b - Gatekeeper Confirmation Message Information Elements

Message Elements		Bytes	Value	Description
Gatekeeper Reject Message 0x3A Information Elements				
	Req Seq No	1	0x65	ID of Request Sequence Number Information Element
	Request Sequence No.	2		This is a monotonically increasing number unique to the sender. It shall be returned by the receiver in any message associated with this specific message.
	Cause	1	0x0E	ID of Cause Information Element
	Cause Code	1	0x01	Success
			0x02	Already Being Configured
			0x03	Not in Host List
			0x08	Validation Failed

FIG. 7 - Gatekeeper Rejection Message Information Elements

Message Elements		Bytes	Value	Description
Admission Request Message 0X3E Information Elements				
	Req Seq No	1	0x65	ID of Request Sequence Number Information Element
	Request Sequence No.	2		This is a monotonically increasing number unique to the sender. It shall be returned by the receiver in any message associated with this specific message.
	UIDPIN	1	0x6B	ID of UIDPIN information Element
	Length (L)	1		Length of UIDPIN
	UIDPIN	L		ASCII UIDPIN
	Calling Party	1	0x13	ID of Calling Party Information Element
	Length (L)	1	L1	Length of Calling Party Number
	Calling Party Number	L1		ASCII Calling Party Number
	Called Party	1	0x42	ID of Called Party Information Element
	Length (L)	1	L2	Length of Called Party Number
	Calling Party Number	L2		ASCII Called Party Number

FIG. 8 - Admission Request Message 0x3E Information Elements

Message Elements		Bytes	Value	Description
Admission Confirmation Message 0x3F Information Elements (Section 1)				
	Req Seq No	1	0x65	ID of Request Sequence Number Information Element
	Request Sequence No.	2		This is a monotonically increasing number unique to the sender. It shall be returned by the receiver in any messages associated with this specific message.
	Auth Code	1	0x45	ID of Authorization Code Information Element
	Next Authorization Code	4		Authorization Code to use for the next call
	Max Duration	1	0x5A	ID of Max Duration Information Element
	Duration	4		Max Duration of call in seconds
	Orig UID	1	0x46	ID of UID Information Element
	Length (L)	1	L1	Length of UID
	Originating UID	L1		ASCII Originating UID
	ORIG E164	1	0x69	ID of OrigE164 Information Element
	Length (L)	1	L2	Length of Originating E164 Number
	Originating E164 Number	L2		ASCII Originating E164 Number
	TERMS	1	0x70	ID of TermE164 Information Element
	Length (L)	1	L3	Length of Terminating E 164 Number
	Terminating E164 Number	L3		ASCII Terminating E164 Number

FIG. 9a - Admission Confirm Message 0x3F Information Elements

Message Elements		Bytes	Value	Description
Admission Confirmation Message 0x3F Information Elements (Section 2)				
	Acct Type	1	0x5C	ID of Account Type Information Element
	Accounty Type	2	0x01	Credit Account
			0x02	Debit Card
			0x03	Limited Credit Account
	Rec_id	1	0x5D	ID of Rec_id Information Element
	Length (L)	1	L1	Length of Rec_id
	Record ID	L1		Record ID of CDR
	Call Rate	1	0x6D	ID of Call Rate Information Element
	Rate	4		Rate in Host Byte Order
	IP_UID Tuple	1	0x5B	ID of IP_UID Tuple Information Element
	No. Tuples	1		Number of tuples in this message
	Host IP Address 1	4		IP Address of Host
	Term UID Length (L)	1	L2	Length of Terminating UID
	Term UID1	L2		ASCII Terminating UID
	BillingUID Length (L)	1	L3	Length of Billing UID
	Billing UID	L3		ASCII Billing UID
	Outpulse No. Len	1		Length of Outpulse No.
	Outpulse No.	4		ASCII Outpulse No.
	Station Type	1	0x00	STATION_TELSET
			0x01	STATION_CO
			0X05	GROUNDSTART
			0X06	LOOPSTART
			0X07	WINKSTART
			0X08	WINK_START_WITH_FGBD
			0X09	DELAY_DIAL
			0X0A	IMMEDIATE_START
			0X0B	FIXED_PAUSE
			0X0C	ISDN_BRI_MVIP
			0X0E	ISDN_PRI

FIG. 9b - Admission Confirm Message 0x3F Information Elements

Message Elements		Bytes	Value	Description
Admission Reject Message 0x40 Information Element				
	Req Seq No	1	0x65	ID of Request Sequence Number Information Element
	Request Sequence Number	2		This is a monotonically increasing number unique to the sender. It shall be returned by the receiver in any messages associated with this specific message.
	Cause	1	0x0E	ID of Cause Information Element
	Cause Code	1	0x01	Success
			0x02	Already Being Configured
			0x03	Not in Host List
			0x08	Validation Failed
			0x09	Could not translate number
			0x0A	Permission Denied

FIG. 10 - Admission Reject Message 0x40 Information Element

Message Elements	Bytes	Value	Description
Authorization Request Message 0x41 Information Elements			
Req Seq No	1	0x65	ID of Request Sequence Number Information Element
Request Sequence Number	2		This is a monotonically increasing number unique to the sender. It shall be returned by the receiver in any messages associated with this specific message.
Orig UID Length (L) Originating UID	1 1 L1	0x46 L1	ID of UID Information Element Length of UID ASCII Originating UID
Auth Code Authorization Code	1 4	0x45	ID of Authorization Code Information Element Authorization Code
Term UID Length (L) Terminating UID	1 1 L2	0x62 L2	ID of Terminating UID Information Element Length of Terminating UID ASCII Terminating UID
Orig GW IP Addr Length (L) Originating Gateway IP Address	1 1 L3	0x73 L3	ID of Originating Gateway IP Address Information Element Length of Originating Gateway IP Address Originating Gateway IP Address
Term GW IP Addr Length (L) Terminating Gateway IP Address	1 1 L4	0x73 L4	ID of Terminating Gateway IP Address Information Element Length of Terminating Gateway IP Address Terminating Gateway IP Address

FIG. 11 - Authorization Request Message 0x41 Information Elements

Message Elements		Bytes	Value	Description
Authorization Confirm Message 0x42 Information Elements				
	Req Seq No	1	0x65	ID of Request Sequence Number Information Element
	Request Sequence Number	2		This is a monotonically increasing number unique to the sender. It shall be returned by the receiver in any messages associated with this specific message.
	Acct Type	1	0x5C	ID of Account Type Information Element
	Account Type	2	0x01	Credit Account
			0x02	Debit Card
			0x03	Limited Credit Account
	Max Duratio	1	0x5A	ID of Max Duration Information Element
	Duration	4		Max Duration of call in seconds

FIG. 12 - Authorization Confirm Message 0x42 Information Elements

Message Elements		Bytes	Value	Description
Authorization Reject Message 0x43 Information Elements				
	Req Seq No	1	0x65	ID of Request Sequence Number Information Element
	Request Sequence Number	2		This is a monotonically increasing number unique to the sender. It shall be returned by the receiver in any messages associated with this specific message.
	Cause	1	0x0E	ID of Cause Information Element
	Cause Code	2	0x01	Success
			0x02	Already Being Configured
			0x03	Not in Host List
			0x08	Validation Failed

FIG. 13 - Authorization Reject Message 0x43 Information Elements

Message Elements		Bytes	Value	Description
End of Call Message 0x44 Information Elements (Section 1)				
	Req Seq No	1	0x65	ID of Request Sequence Number Information Element
	Request Sequence Number	2		This is a monotonically increasing number unique to the sender. It shall be returned by the receiver in any messages associated with this specific message.
	Rec_id	1	0x5D	ID of Rec_id Information Element
	Length (L)	1		Length of Recd_id
	Record ID	L		Record ID of CDR
	Call Date	1	0x5e	ID of Call Date Information Element
	Date	8		ASCII Date in format YYYYMMDD
	Call Time	1	0x5F	ID of Call Time Information Element
	Time	6		ASCII Tim in format HHMMSS
	Billing UID	1	0x63	ID of UID Information Element
	Length (L)	1		Length of UID
	Billing UID	L		ASCII UID to Bill this call to
	OrigCh ID	1	0x60	ID of Originating Channel ID Information Element
	IP Address	4		IP Address
	span_id	2		Span ID
	channel_id	2		Channel ID

FIG. 14a - End of Call Message 0x44 Information Elements (Section 1)

	TmCh ID	1	0x64	ID of Terminating Channel ID Information Element
	IP Address	4		Terminating IP Address
	span_id	2		Terminating Span ID
	channel_id	2		Terminating Channel ID
	Disc Reason	1	0x61	ID of Disconnect Reason Information Element
	Reason Code	1	0x01	Terminating Side Disconnect
			0x02	Originating Side Disconnect
			0x03	Terminating Side All Trunks Busy
			0x04	Far end number busy
			0x05	Incomplete Dial
			0x06	Dropped Call
	Orig UID	1	0x46	ID of UID Information Element
	Length (L)	1		Length of UID
	Originating UID	L		ASCII Originating UID
	Term UID	1	0x62	ID of UID Information Element
	Length (L)	1		Length of UID
	Terminating UID	L		ASCII Terminating UID
	ORIG E164	1	0x69	ID of OrigE164 Information Element
	Length (L)	1		Length of Originating E164 Number
	Originating E164 Number	L		ASCII Originating E164 Number
	TERM E164	1	0x70	ID of TermE164 Informationg Element
	Length (L)	1		Length of Terminating E164 Number
	Terminating E164 Number	L		ASCII Terminating E164 Number
	Usage	1	0x6c	ID of Usage Information Element
	Usage	4		Usage in Host Byte Order

FIG. 14b - End of Call Message 0x44 Information Elements (Section 2)

Message Elements	Bytes	Value	Description
End of Call Ack Message 0x45 Information Elements			
Req Seq No	1	0x65	ID of Request Sequence Number Information Element
Request Sequence Number	2		This is a monotonically increasing number unique to the sender. It shall be returned by the receiver in any messages associated with this specific message.

FIG. 15 - End of Call Ack Message 0x45 Information Elements

Message Elements	Bytes	Value	Description
Bandwidth Request Message 0x47 Information Elements			
Req Seq No	1	0x65	ID of Request Sequence Number Information Element
Request Sequence Number	2		This is a monotonically increasing number unique to the sender. It shall be returned by the receiver in any messages associated with this specific message.
Class of Service	1	0x6e	ID of Class of Service Information Element
Number of Bytes in IE	1		Number of bytes in Class of Service Information Element
Class of Service	1	0x01 0x05	Mulaw SX7300
Farend IP Addr	1	0x6f	ID of Farend IP Address Information Element
Length (L)	1		Length of Farend IP Address
Farend IP Address	L		Farend IP Address
Orig UID	1	0x46	ID of Originating UID information Element
Length (L)	1		Length of Originating UID
Originating UID	L		ASCII Originating UID

FIG. 16 - Bandwidth Request Message 0x47 Information Elements

Message Elements	Bytes	Value	Description
Bandwidth Confirm Message 0x48 Information Elements			
Req Seq No	1	0x65	ID of Request Sequence Number Information Element
Request Sequence Number	2		This is a monotonically increasing number unique to the sender. It shall be returned by the receiver in any messages associated with this specific message.

FIG. 17 - Bandwidth Confirm Message 0x48 Information Elements

Message Elements		Bytes	Value	Description
Bandwidth Reject Message 0x49 Information Elements				
	Req Seq No	1	0x65	ID of Request Sequence Number Information Element
	Request Sequence Number	2		This is a monotonically increasing number unique to the sender. It shall be returned by the receiver in any messages associated with this specific message.

FIG. 18 - Bandwidth Reject Message 0x49 Information Elements

Message Elements		Bytes	Value	Description
FaxCall Message 0x4A Information Elements				
	Class of Service	1	0x6e	ID of Class of Service Information Element
	Number of Bytes in IE	1		Number of bytes in Class of Service Information Element
	Class of Service	1	0x01 0x05	Mulaw SX7300

FIG. 19 - FaxCall Message 0x4A Information Elements

Message Elements		Bytes	Value	Description
GK Trunks Busy Message 0x4E Information Elements				
	Req Seq No	1	0x65	ID of Request Sequence Number Information Element
	Request Sequence Number	2		This is a monotonically increasing number unique to the sender. It shall be returned by the receiver in any messages associated with this specific message.

FIG. 20 - GK Trunks Busy Message 0x4E Information Elements

Message Elements		Bytes	Value	Description
GK TRUNKS BUSY ACK MESSAGE 0x4F Information Elements				
	Req Seq No	1	0x65	ID of Request Sequence Number Information Element
	Request Sequence Number	2		This is a monotonically increasing number unique to the sender. It shall be returned by the receiver in any messages associated with this specific message.

FIG. 21 -GK TRUNKS BUSY ACK MESSAGE 0x4F Information Elements

Message Elements		Bytes	Value	Description
GK TRUNKS BUSY ACK MESSAGE 0x4E Information Elements				
	Req Seq No	1	0x65	ID of Request Sequence Number Information Element
	Request Sequence Number	2		This is a monotonically increasing number unique to the sender. It shall be returned by the receiver in any messages associated with this specific message.

FIG. 22 - GK TRUNKS BUSY ACK MESSAGE 0x4E Information Elements

Message Elements		Bytes	Value	Description
GK TRUNKS UNBUSY MESSAGE 0x4C Information Elements				
	Req Seq No	1	0x65	ID of Request Sequence Number Information Element
	Request Sequence Number	2		This is a monotonically increasing number unique to the sender. It shall be returned by the receiver in any messages associated with this specific message.

FIG. 23 - GK TRUNKS UNBUSY MESSAGE 0x4C Information Elements

Message Elements		Bytes	Value	Description
GK TRUNKS UNBUSY ACK MESSAGE 0x4D Information Elements				
	Req Seq No	1	0x65	ID of Request Sequence Number Information Element
	Request Sequence Number	2		This is a monotonically increasing number unique to the sender. It shall be returned by the receiver in any messages associated with this specific message.

FIG. 24 - GK TRUNKS UNBUSY ACK MESSAGE 0x4D Information Elements

Message Elements		Bytes	Value	Description
Heartbeat Message 0x53 Information Elements				
	Req Seq No	1	0x65	ID of Request Sequence Number Information Element
	Request Sequence Number	2		This is a monotonically increasing number unique to the sender. It shall be returned by the receiver in any messages associated with this specific message.
	UIDPIN	1	0x6B	ID of UIDPIN Information Element
	Length (L)	1		Length of UIDPIN
	UIDPIN	L		ASCII UIDPIN
	Active Calls	1	0x7c	ID of Active Calls Information Element
	Number of UID-SeqNum Tuples	1		Number of Sequence Number and Originating UID Tuples in this message
	SeqNum0	1		first byteof Sequence Number
	SeqNum1	1		second byte of Sequence Number
	Orig UID Length	1		ASCII Terminating UID
	Originating UID	L		ASCII Originating UID

FIG. 25 - Heartbeat Message 0x53 Information Elements

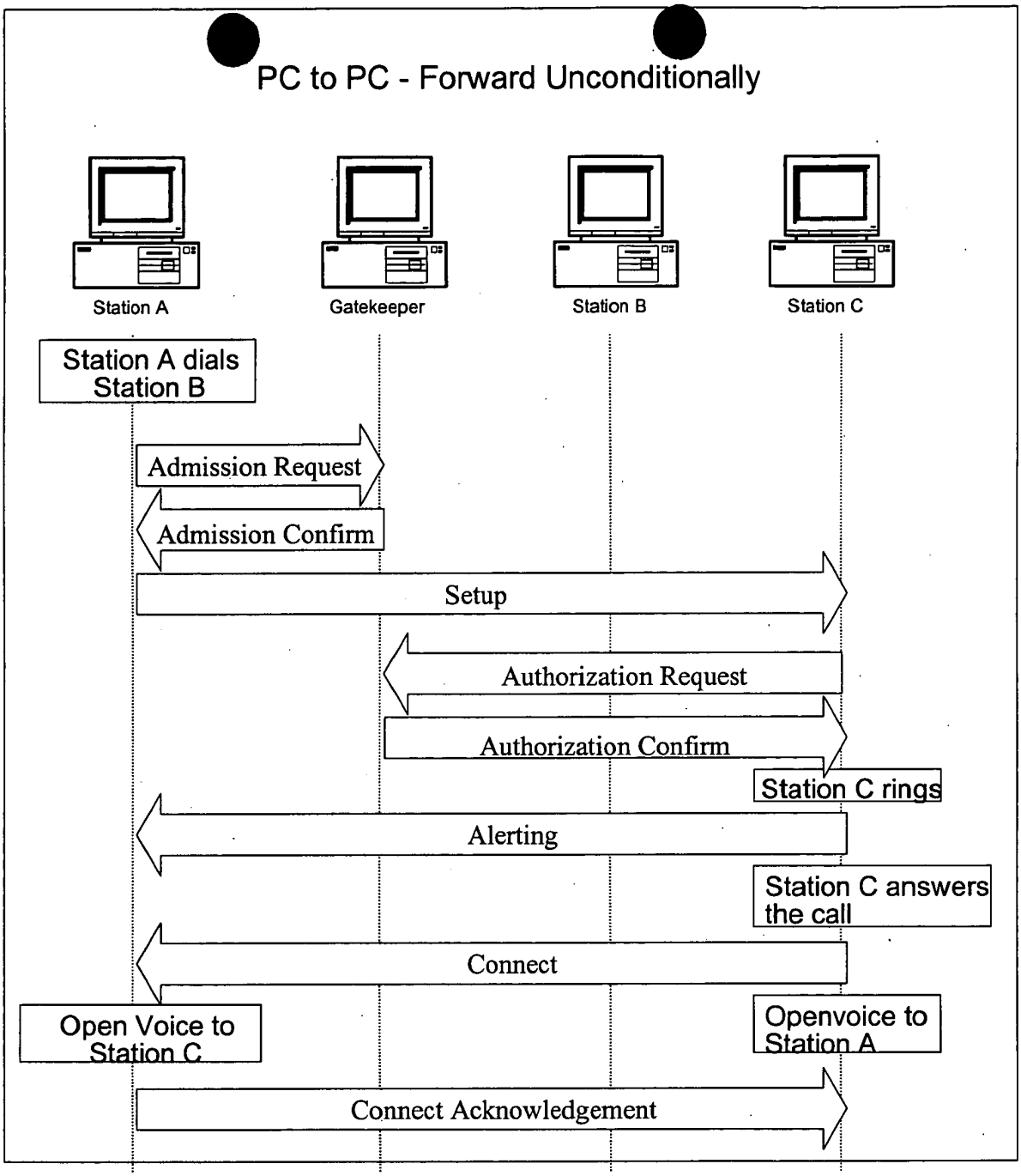
PC to PC - Forward Unconditionally
Station A
Gatekeeper
Station B
Station C
Station A dials Station B
Admission Request
Admission Confirm
Setup
Authorization Request
Authorization Confirm
Station C rings
Alerting
Station C answers the call
Connect
Open Voice to Station C
Openvoice to Station A
Connect Acknowledgement

FIG. 26

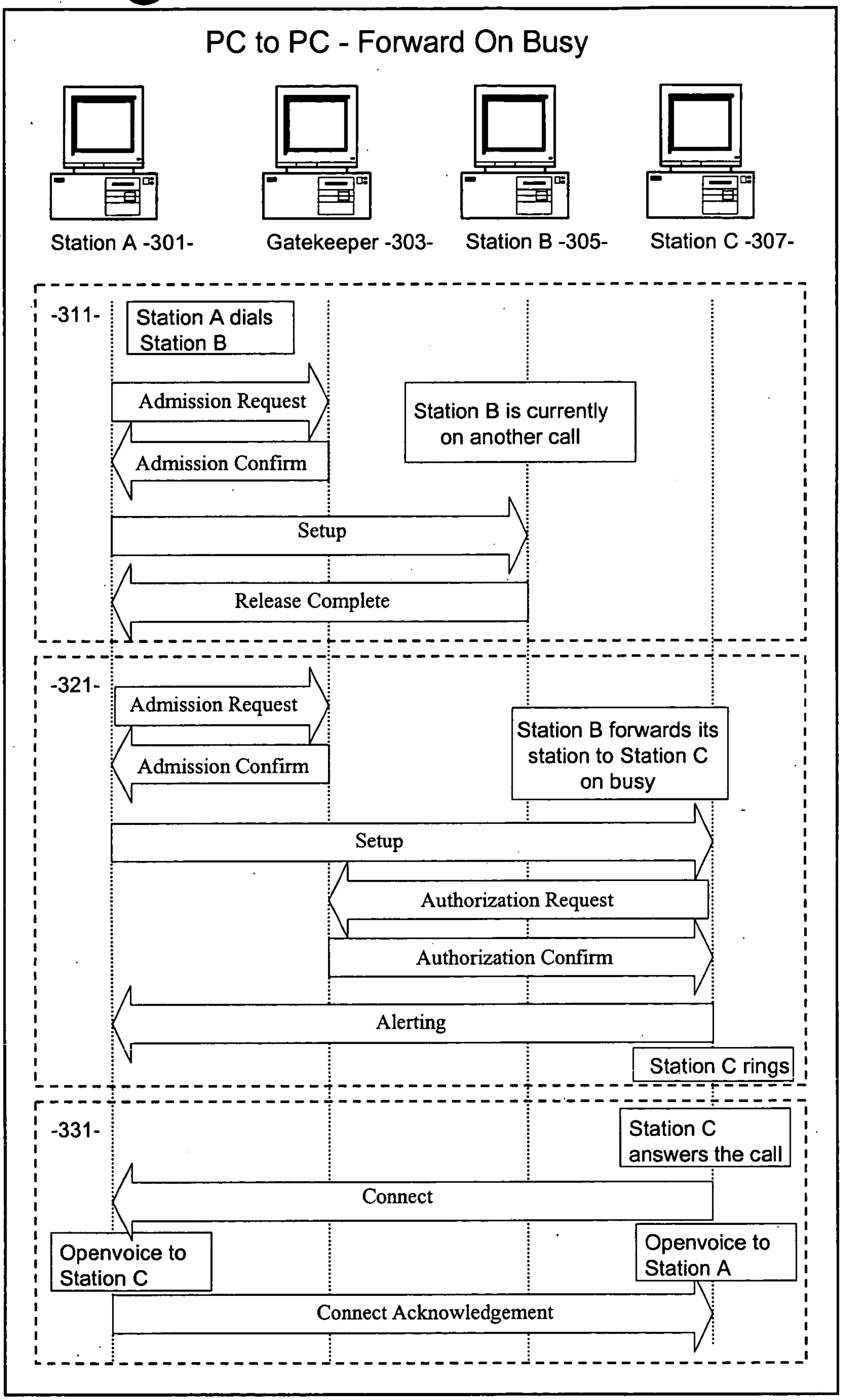

FIG. 27

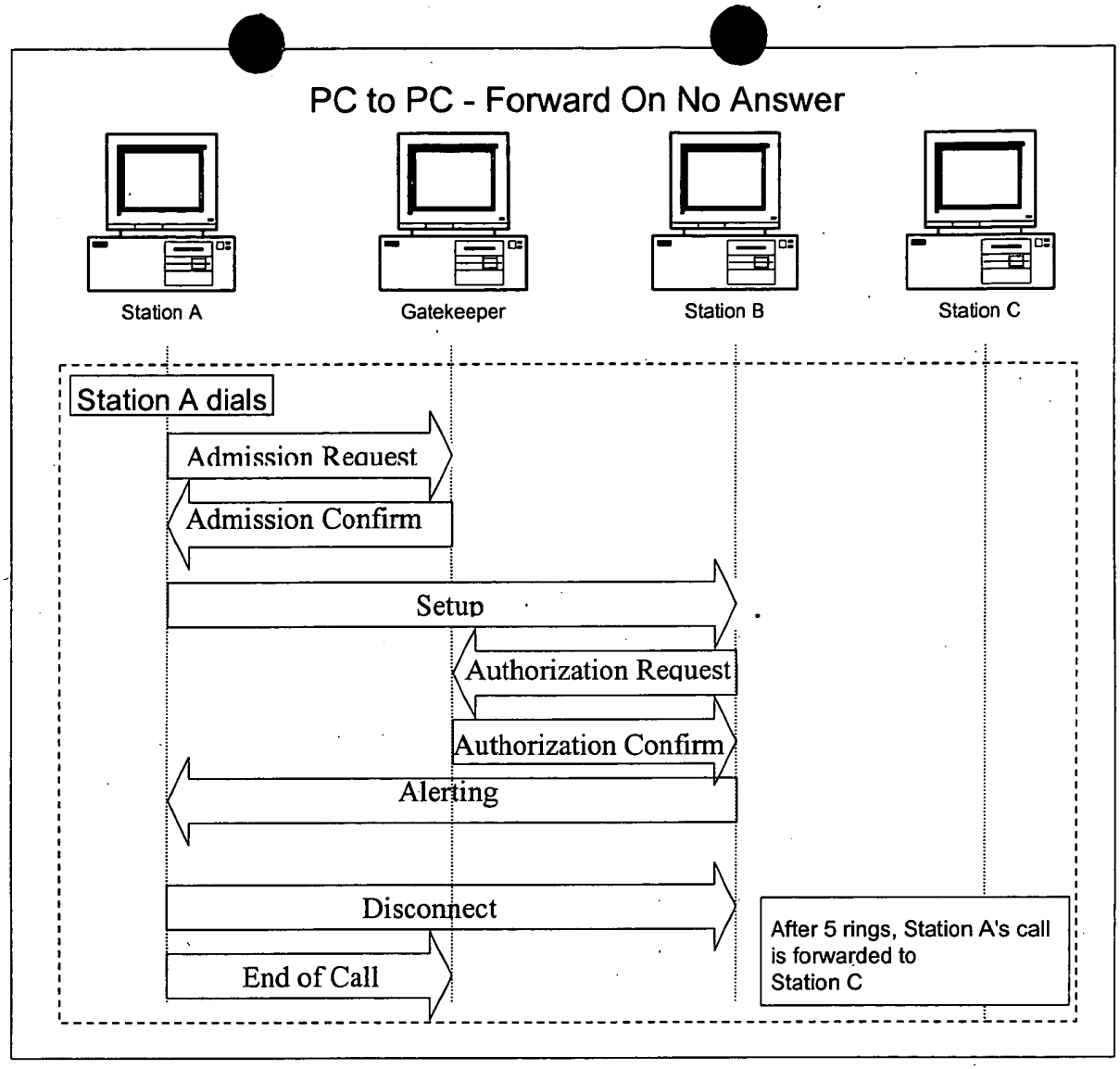

FIG. 28a

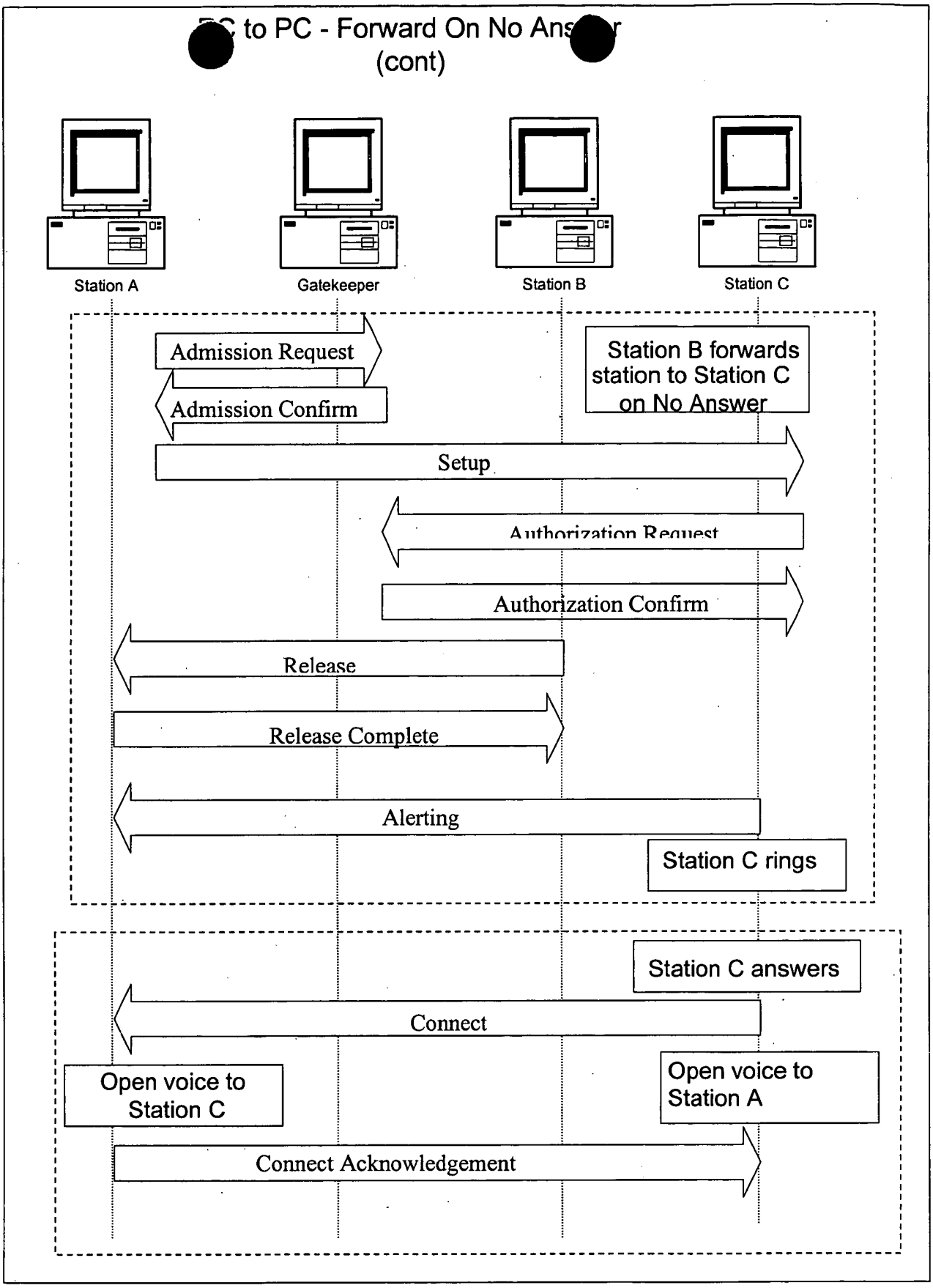
PC to PC - Forward On No Answer
(cont)
Station A
Gatekeeper
Station B
Station C
Admission Request
Admission Confirm
Station B forwards station to Station C on No Answer
Setup
Authorization Request
Authorization Confirm
Release
Release Complete
Alerting
Station C rings
Station C answers
Connect
Open voice to Station C
Open voice to Station A
Connect Acknowledgement

FIG. 28b

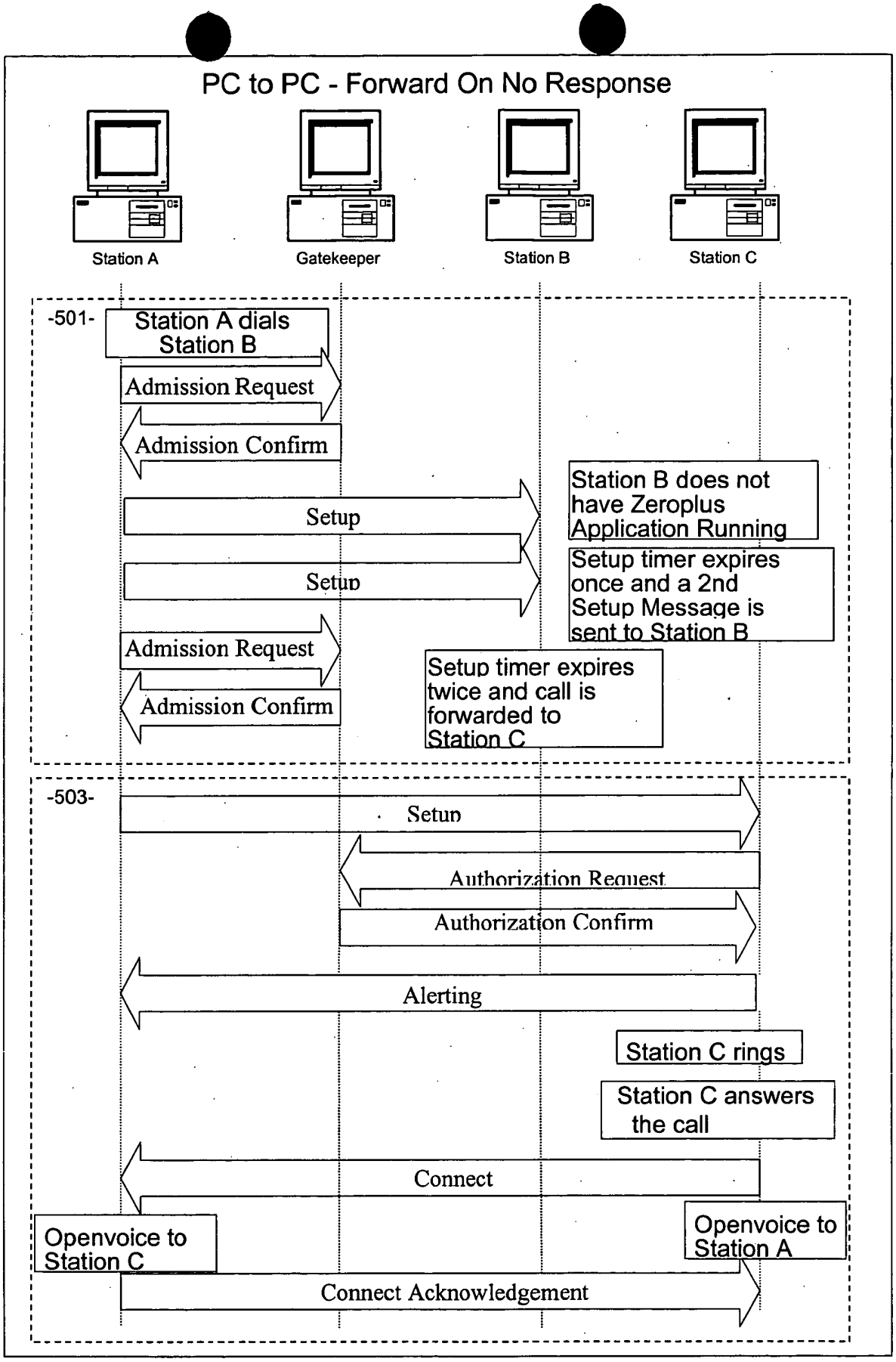
PC to PC - Forward On No Response
Station A
Gatekeeper
Station B
Station C
-501-
Station A dials Station B
Admission Request
Admission Confirm
Setup
Station B does not have Zeroplus Application Running
Setup
Setup timer expires once and a 2nd Setup Message is sent to Station B
Admission Request
Admission Confirm
Setup timer expires twice and call is forwarded to Station C
-503-
Setup
Authorization Request
Authorization Confirm
Alerting
Station C rings
Station C answers the call
Connect
Openvoice to Station C
Openvoice to Station A
Connect Acknowledgement

FIG. 29

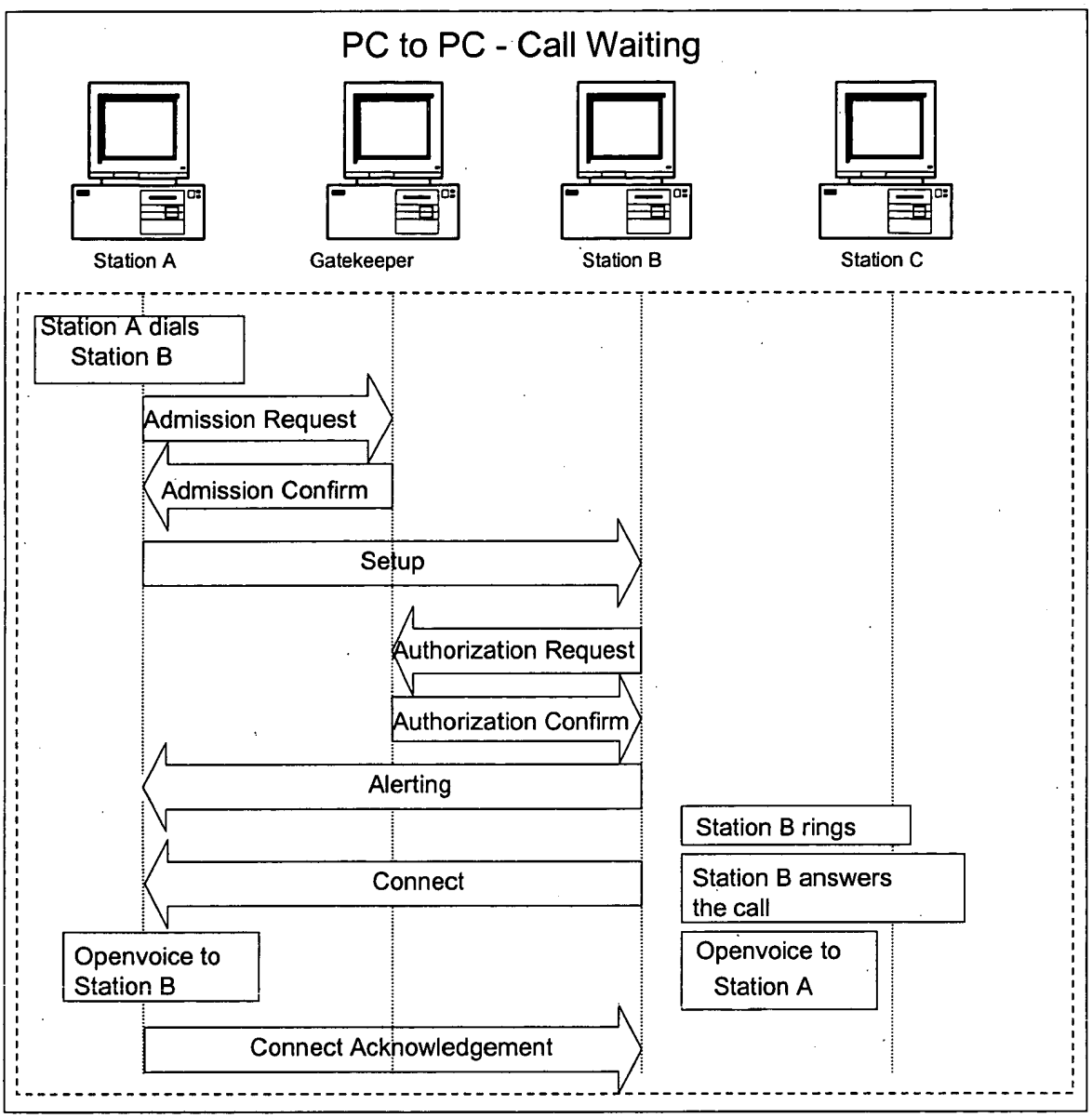

FIG. 30a

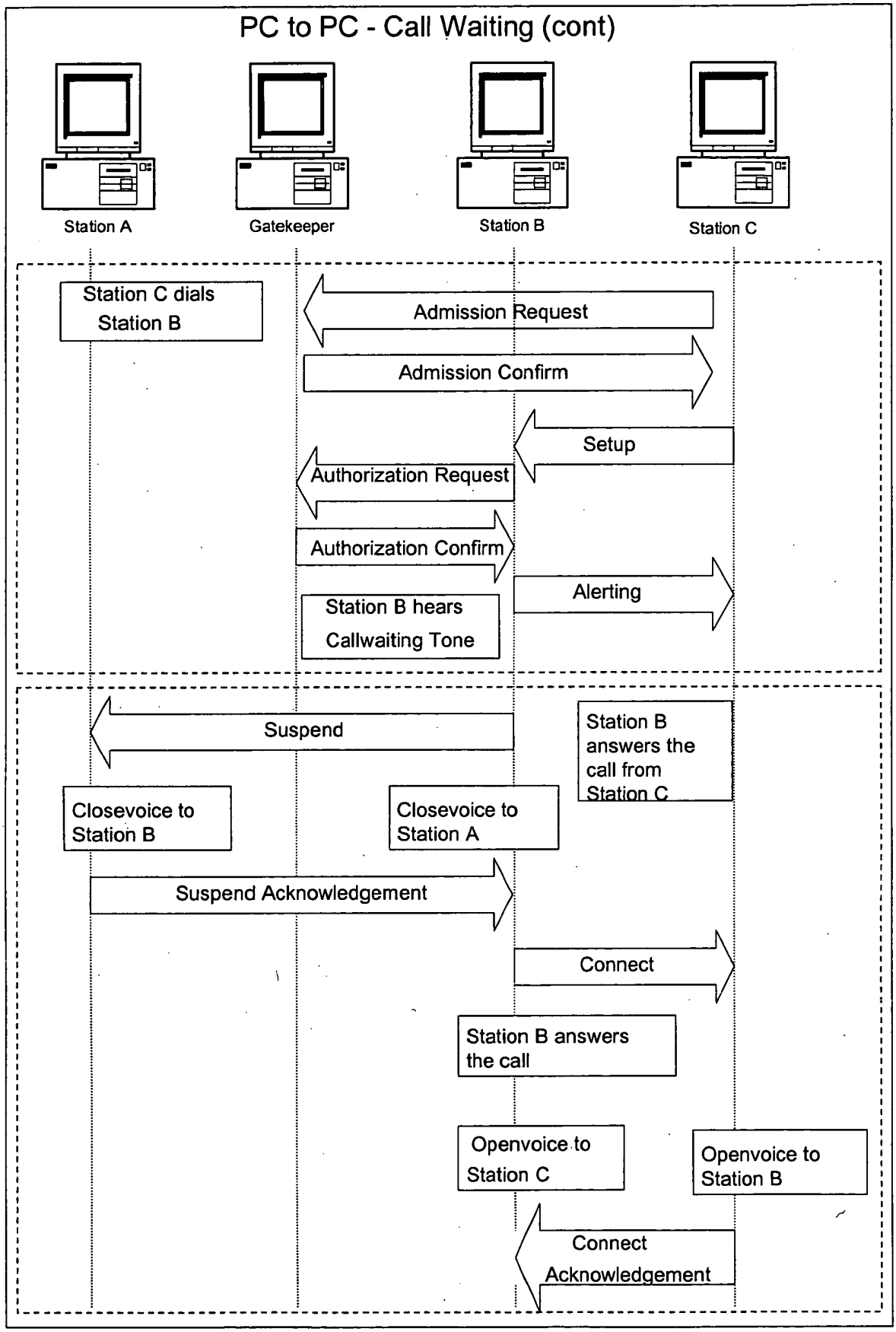

FIG. 30b

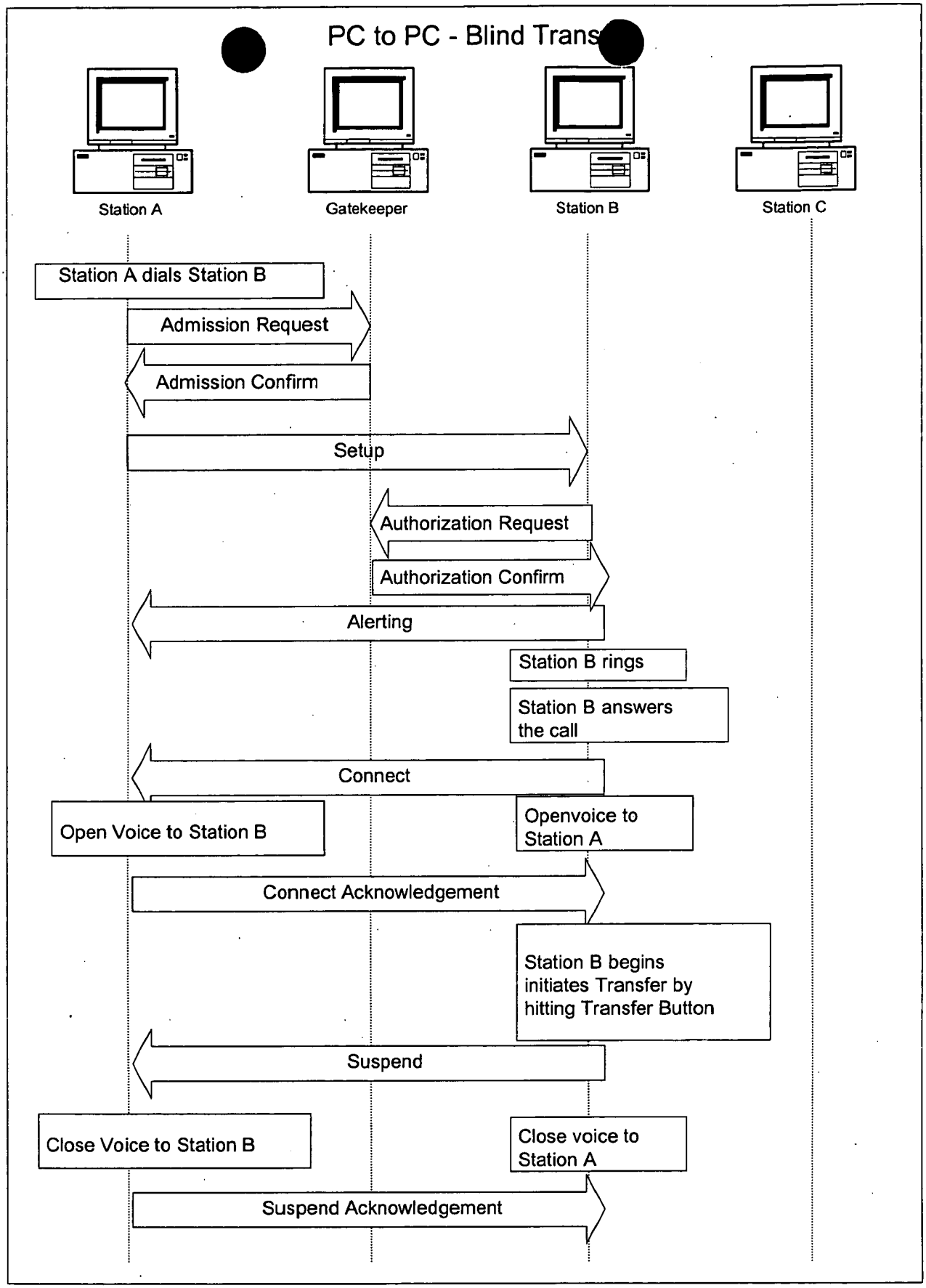
PC to PC - Blind Trans
Station A
Gatekeeper
Station B
Station C
Station A dials Station B
Admission Request
Admission Confirm
Setup
Authorization Request
Authorization Confirm
Alerting
Station B rings
Station B answers the call
Connect
Open Voice to Station B
Openvoice to Station A
Connect Acknowledgement
Station B begins initiates Transfer by hitting Transfer Button
Suspend
Close Voice to Station B
Close voice to Station A
Suspend Acknowledgement

FIG. 31a

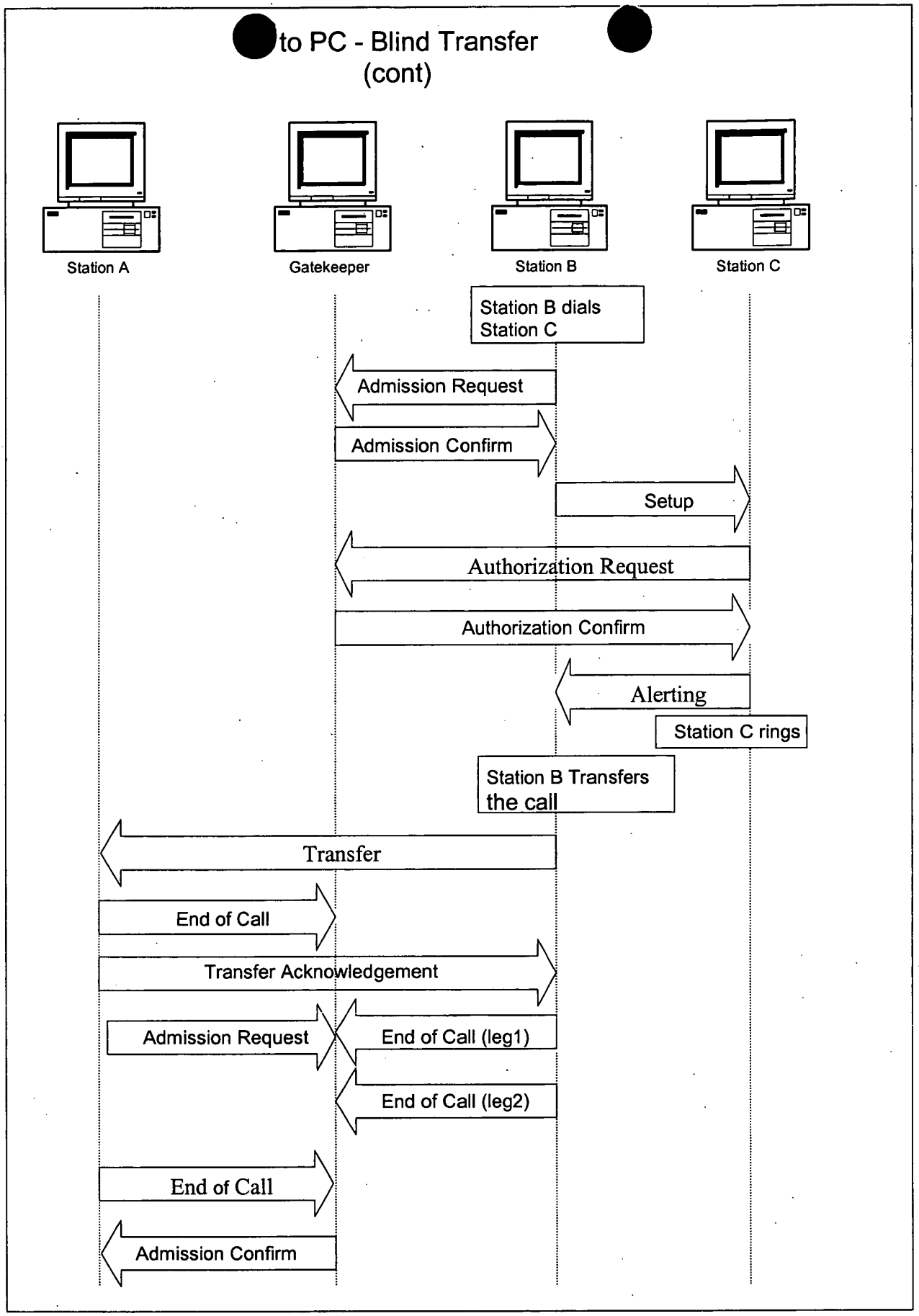

FIG. 31b

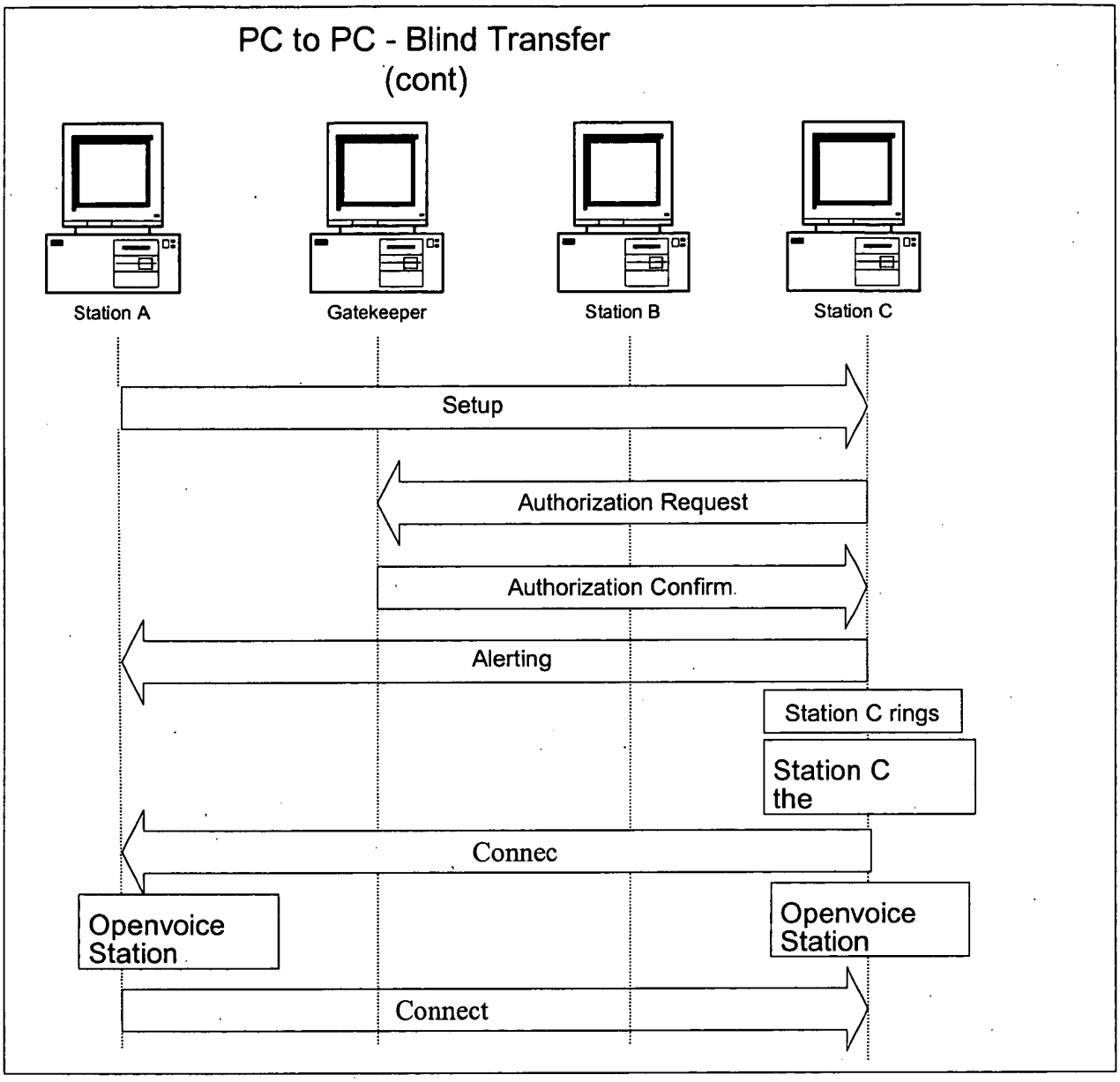
PC to PC - Blind Transfer
(cont)
Station A
Gatekeeper
Station B
Station C
Setup
Authorization Request
Authorization Confirm
Alerting
Station C rings
Station C
the
Connec
Openvoice
Station
Openvoice
Station
Connect

FIG. 31c

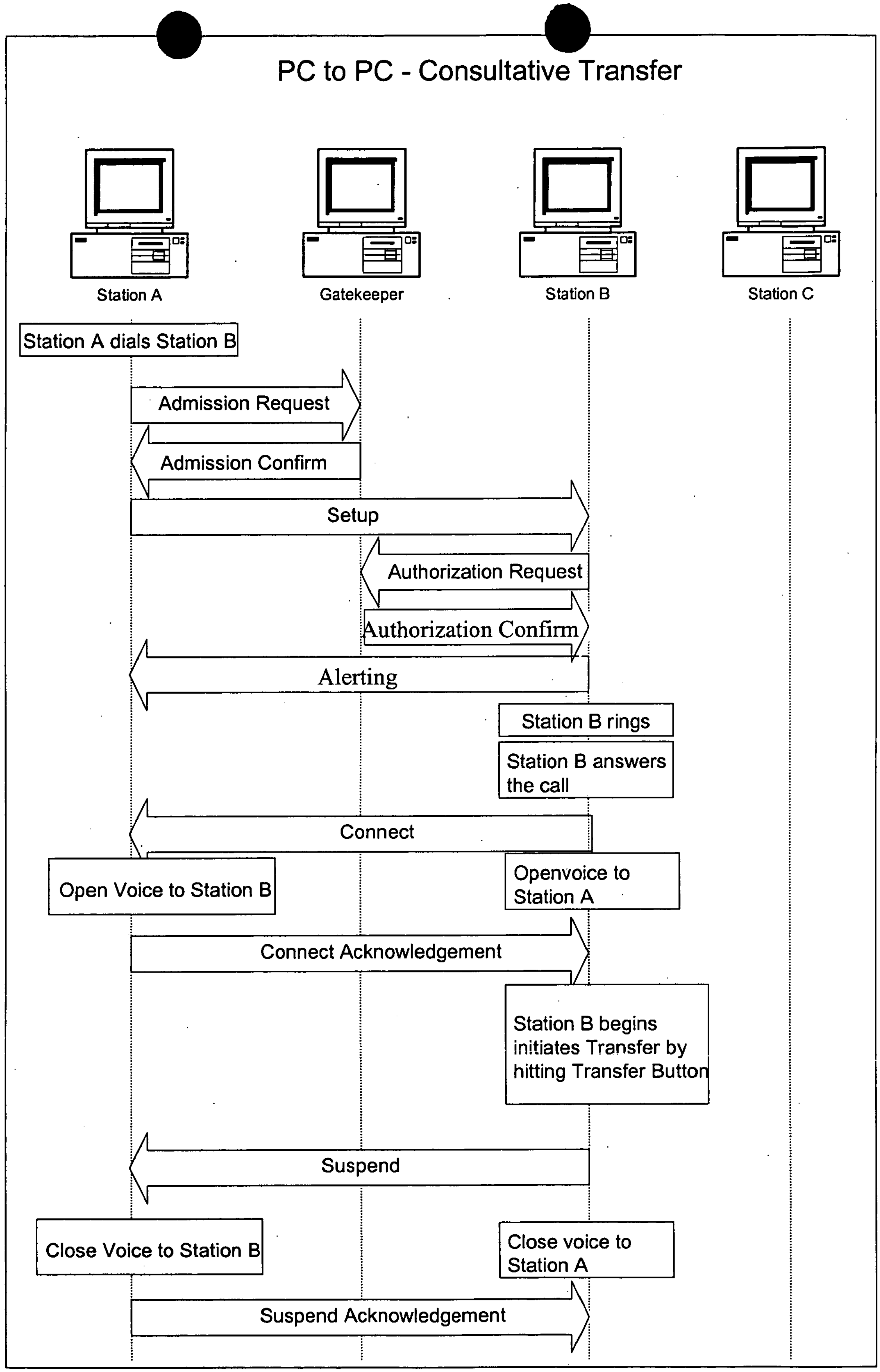

FIG. 32a

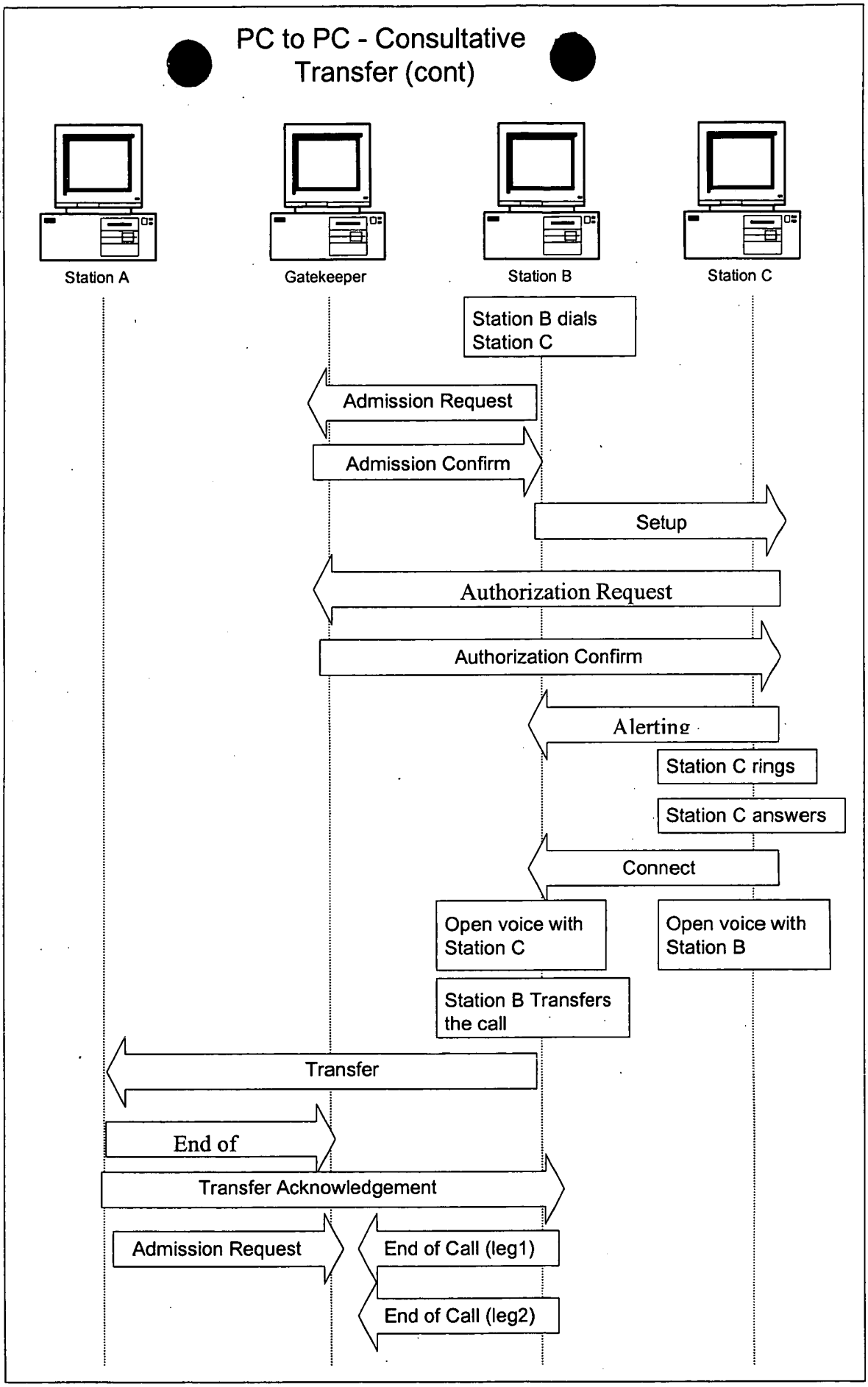

FIG. 32b

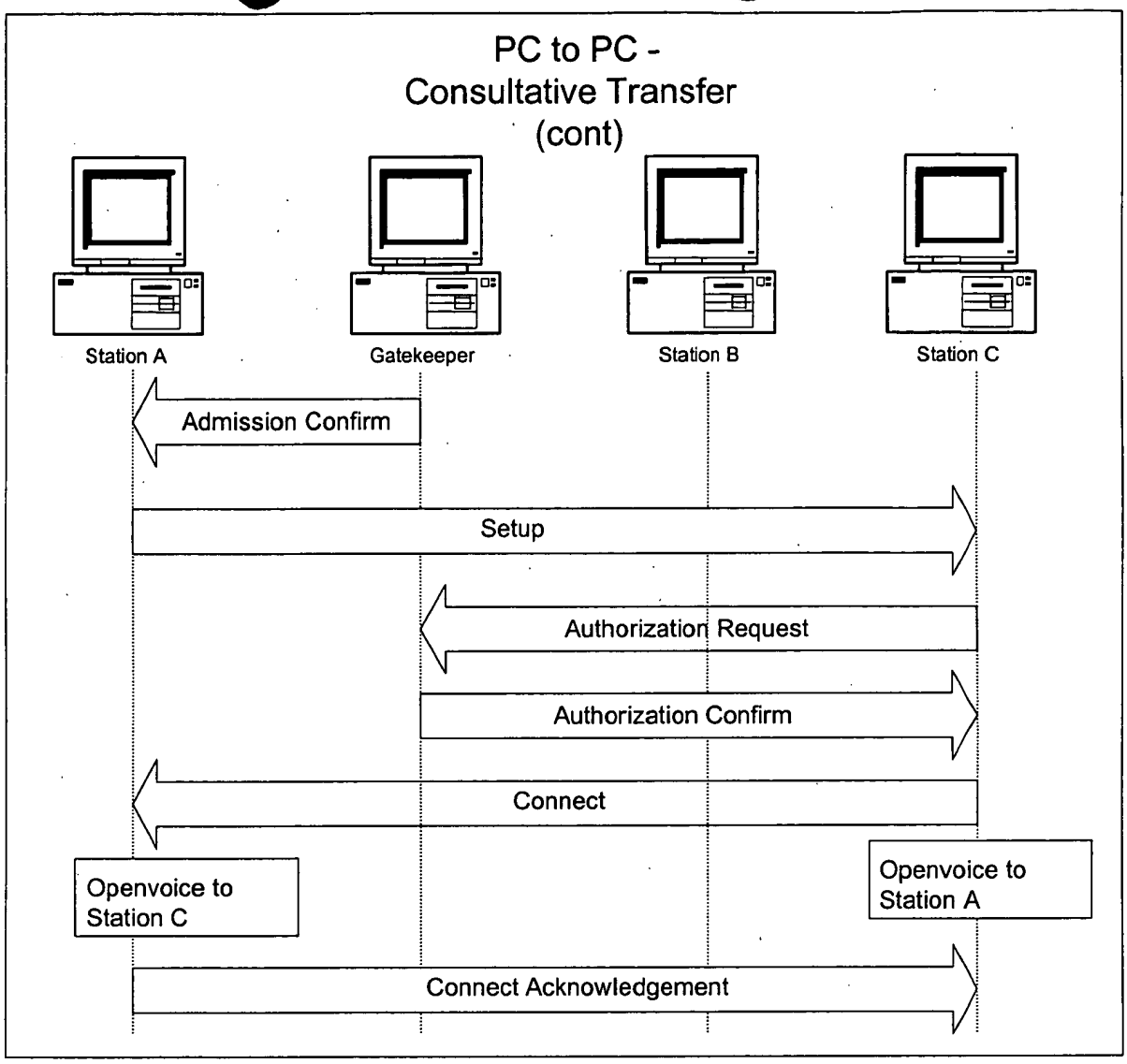

FIG. 32c

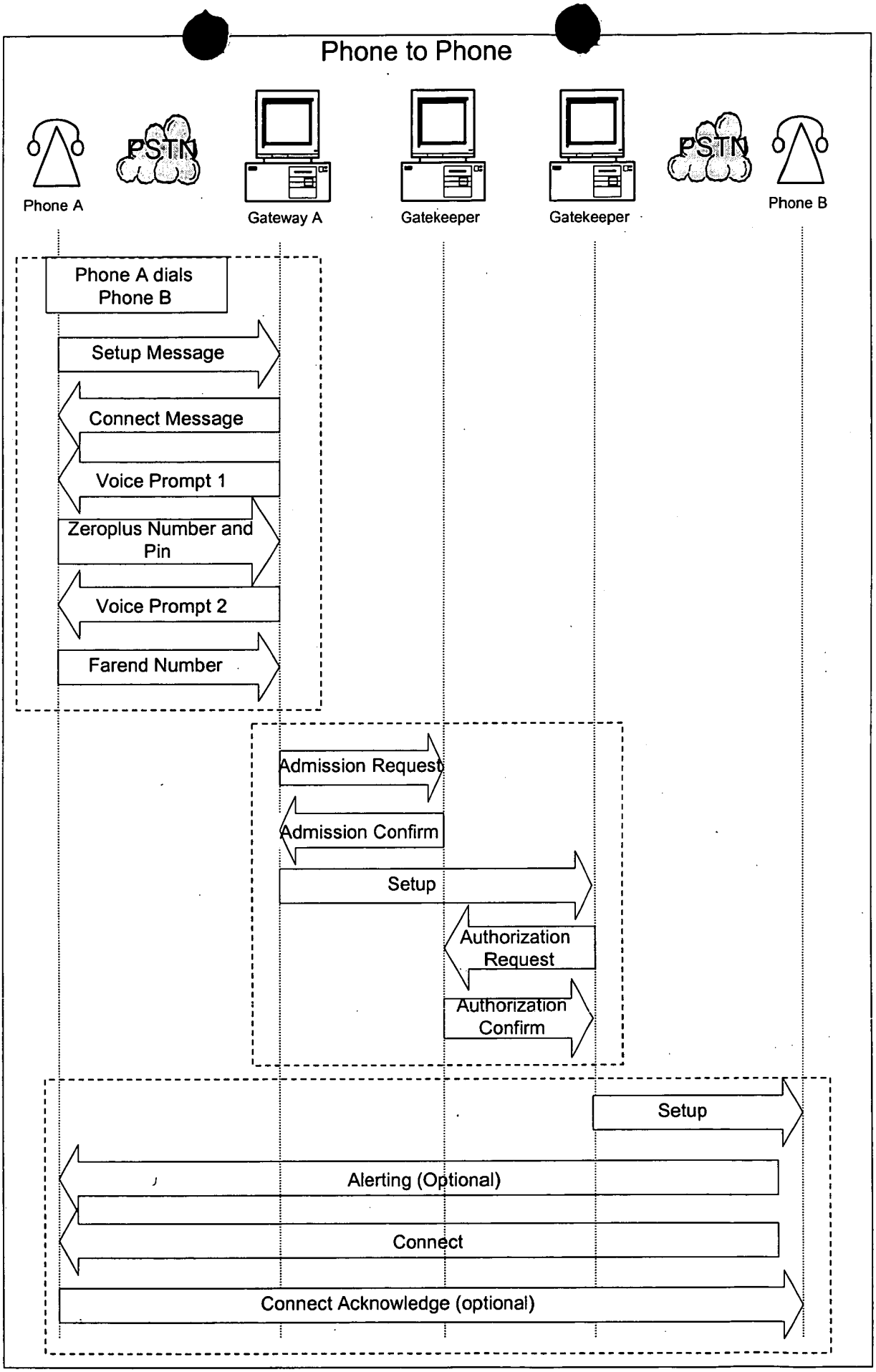
Phone to Phone
Phone A
PSTN
Gateway A
Gatekeeper
Gatekeeper
PSTN
Phone B
Phone A dials Phone B
Setup Message
Connect Message
Voice Prompt 1
Zeroplus Number and Pin
Voice Prompt 2
Farend Number
Admission Request
Admission Confirm
Setup
Authorization Request
Authorization Confirm
Setup
Alerting (Optional)
Connect
Connect Acknowledge (optional)

FIG. 33